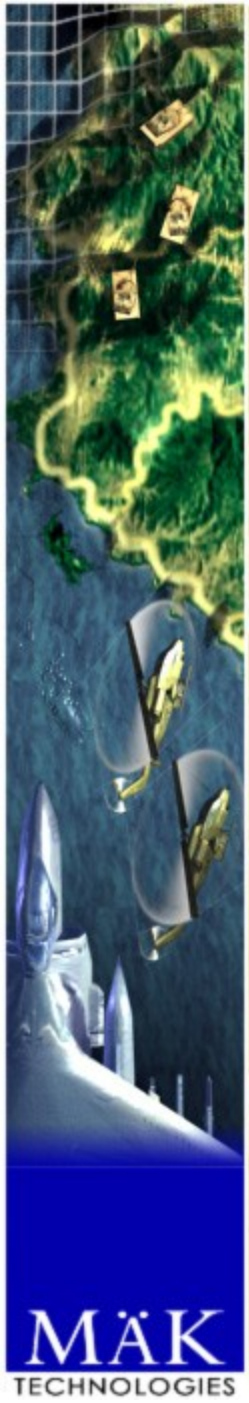

Integrating Heterogeneous Games For Distributed Team Training

NAVMSMO Technical Interchange Meeting

October 10, 2002

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SONAR

Agenda

- Introductions
- SIM*inter*NET Background
- Integration of *Fleet Command*™ and *MAGTF XXI*
- Next Steps
- *Fleet Command*™ and *MAGTF XXI* Demos

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SONALYSTS

MÄK Company Overview

- Founded in 1990; HQ in Cambridge, Mass.
- Privately held, profitable and growing
- Expertise in synthetic environment advanced R&D, product development, and integration
- Pioneer in adapting game technology for distributed team training
- Representatives in 30 countries
- World's leading supplier of HLA tools.

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Sonalysts, Inc. Overview

- Founded in 1973; HQ in Waterford, CT
- Employee owned ~ 475 professionals
- 15 Offices throughout U. S. and business throughout the world
- Modeling and simulation, training and education, software and e-business development, and operations analysis focus
- Film, Video, and audio studios with multimedia production facilities and services

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What is SIM*inter*NET?

- Tactical Leadership Trainers
- Game-Style User Interface
- Rapid Mission / Scenario Generation
- Collaborative Environments
- Distributed After Action Review
- Interoperable through the HLA
- Internet Compatible

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Why Leverage Game Technology?

- Distribute synthetic environment training over the Internet using web technology
- Leverage commercial investment
- Product requires little or no maintenance or instruction
- Product is fun; trainees will use it more
- DoD involvement ensures no negative training
- Cost of units brought down to mass-market levels
- Good public relations and useful recruiting tool.
- Can be used on deployment, by Reservists at home, etc.

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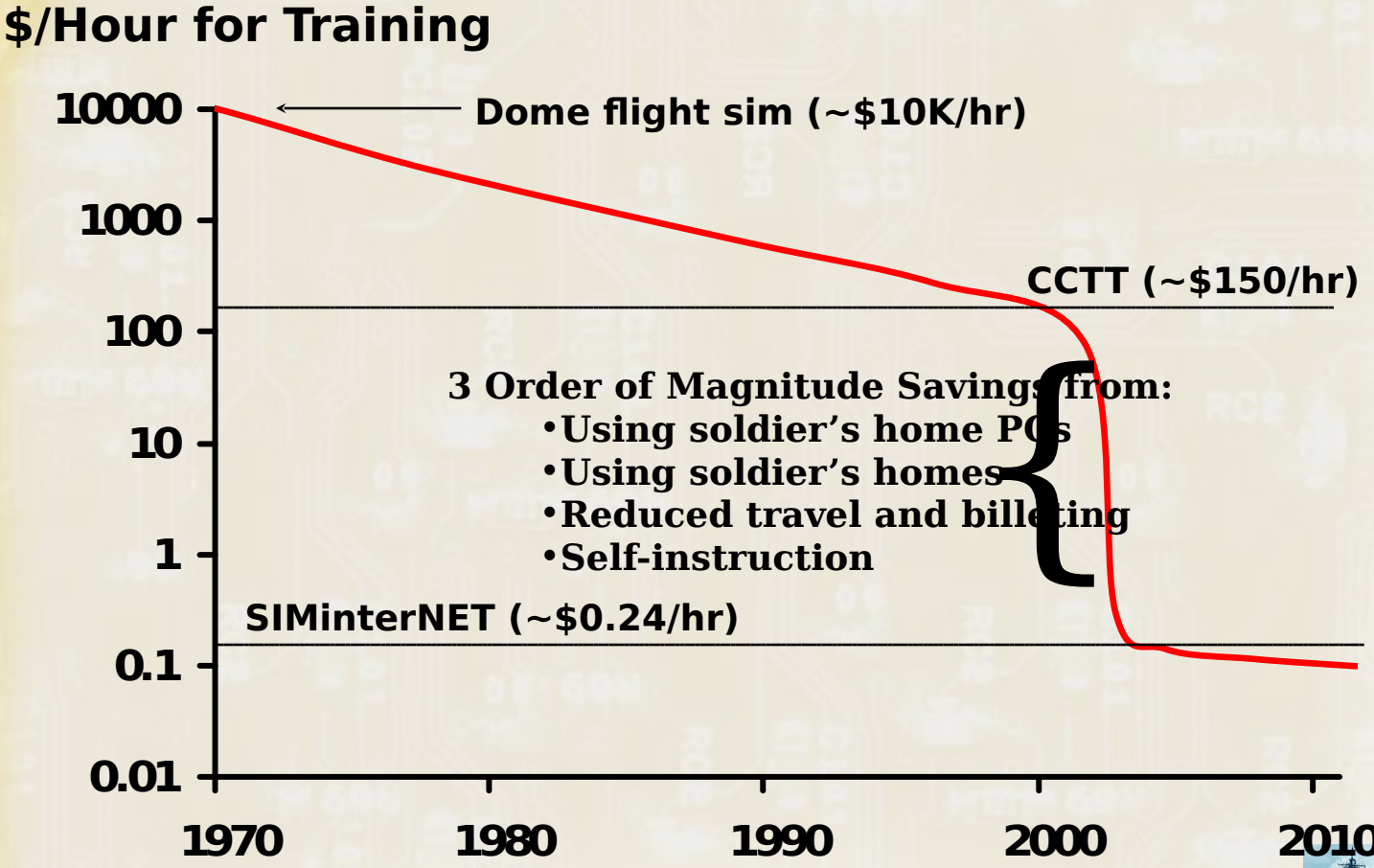
Cost Argument



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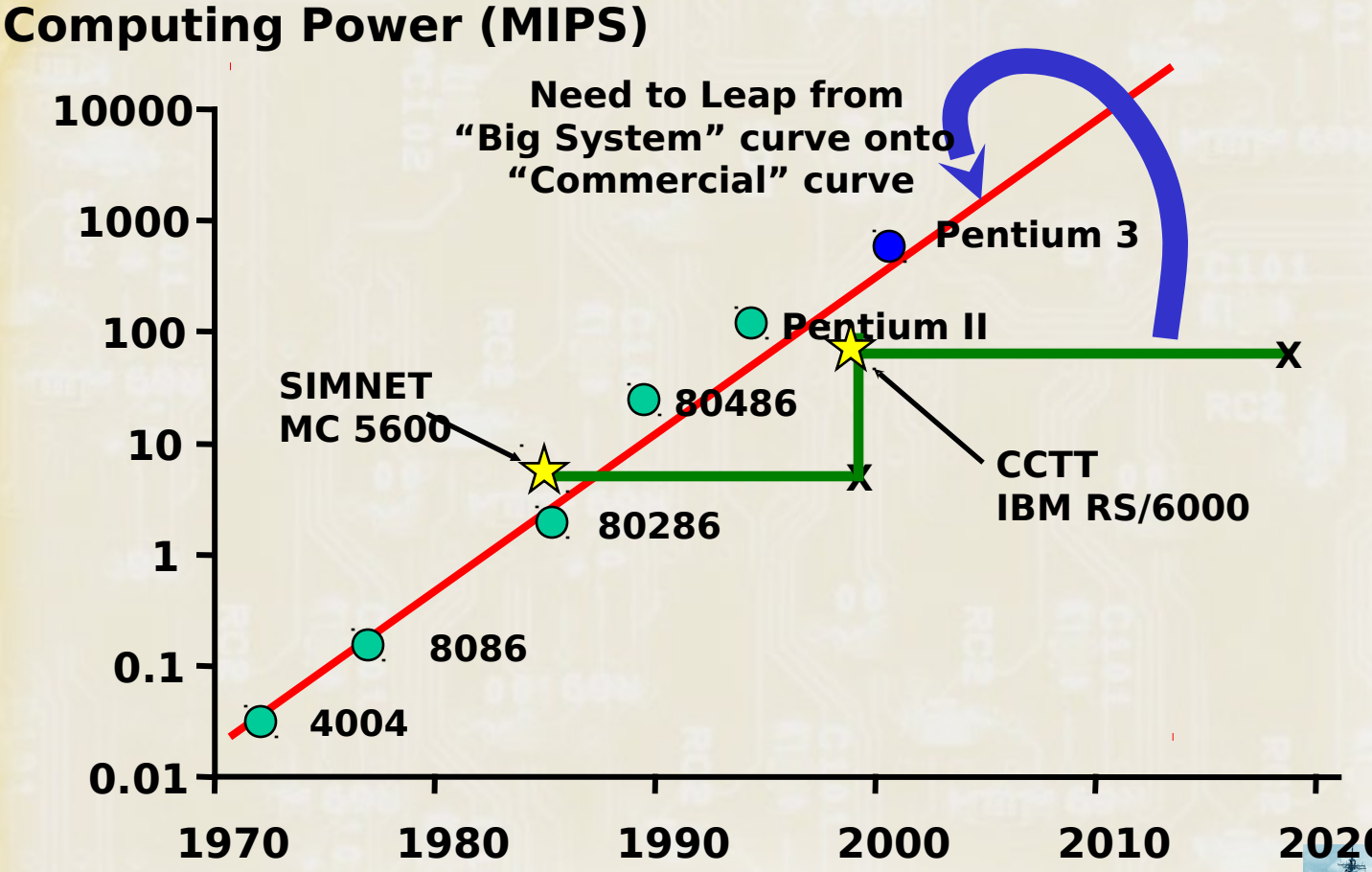
Technical Argument



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Anticipated Changes

Augmentation of Current Practices:

- *Stand-Alone Use* - tutorials in Distance Learning course of study, familiarization before using bigger systems (like CCTT, BFTT) and sustainment afterward
- *Small Team Exercises* - network small units for tactical team training, Command and Control training

Potential New Capabilities:

- *Large Exercises* - network unprecedented numbers of combatants for major exercise rehearsal, or large scale combat experiments

All While On Deployment

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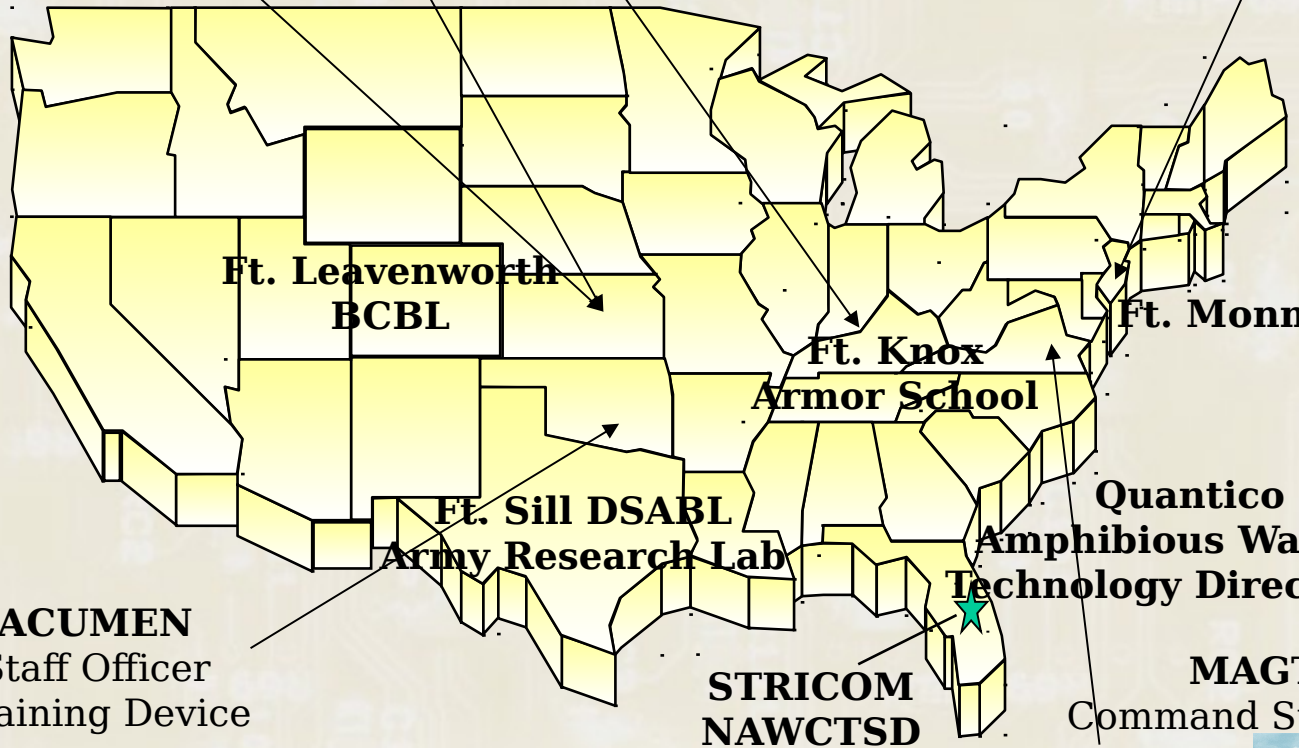
Current MAK Programs

Battle Staff Virtual Trainer
Army Battalion Staff
Collaborative Trainer

Battle Command 2010
Army Battalion-level
Commander Game

Spearhead II
Platoon-level
Tank Simulation

Army Commander 2010
Army Division-level
Command Game



ACUMEN
Staff Officer
Training Device

MAGTF XXI
Command Strategy Gam

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Bringing in Other Content

- SIM*inter*NET strategy requires lots of content
- Sonalysts' SBIR perfect opportunity for Naval content
- Continually seek high-quality additions

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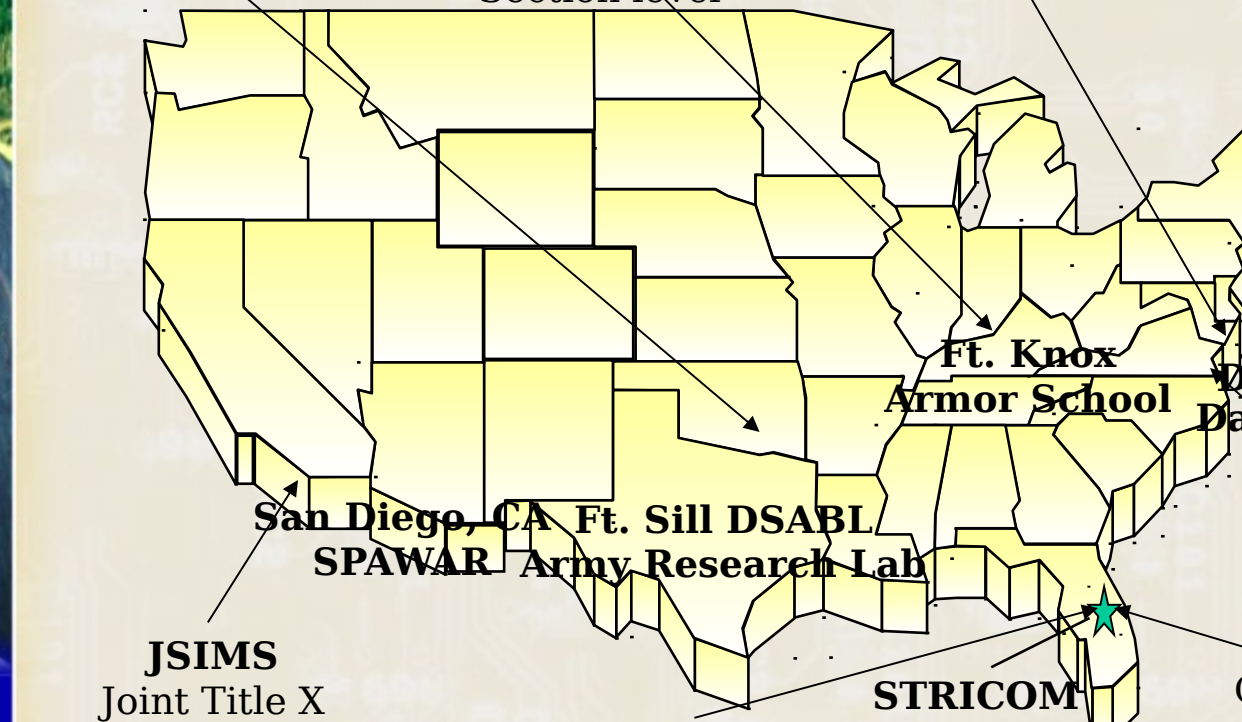
Representative Sonalysts Programs



MLRS VST
Army Officer Training Device

Armor Interactive Terrain Board (ITB)
Tactical Ops Platoon & Section level

WVTN VSTX
Army CASCOM Convoy Simulation

DD (X)
CONOPS, Training, and HSI

USW Training
Surface Ship, Sub and UUVs

Newport, RI
Waterford, CT

Ft. Lee, VA
Dam Neck, VA
Dahlgren, VA

Ft. Knox
Armor School

San Diego, CA
SPAWAR

Ft. Sill DSABL
Army Research Lab

BFTT
Afloat Training Exercise and Management System

JSIMS
Joint Title X War Game Simulation

STRICOM
NAWCTSD
Orlando, FL

IAGENTS
ONR Training Research

Battle Stations 21
RTC Great Lakes

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Sonalysts Phase II SBIR

- Design, Develop, and Install a Prototype Expeditionary Warfare Afloat Training Support Module (EWTSM) Onboard an LHA/LHD Class Ship for Evaluation by Embarked Navy-Marine Corps Staff.

- This Prototype Will Demonstrate the Potential for Low-Cost Simulations to be Integrated into Afloat Training Environments, such as BFTT.

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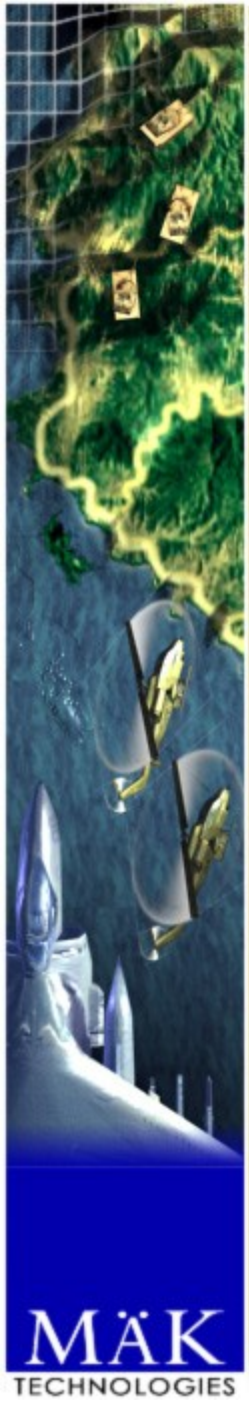
EWTSM Overview



CG/DD/DDG

Other ARG Units

Command Information Center (CIC)
Training Audience
Sim Viewer /Web Browser *IP Phone*

LHA/LHD

Command Information Center (CIC)
Training Audience
Sim Viewer /Web Browser *IP Phone*

Tactical Air Coordination Center (TACC)
Training Audience

Joint Intelligence Center (JIC)
Training Audience

Support Arms Coordination Center (SACC)
Training Audience

Command Information Center (CIC)
Training Audience

Landing Force Operations Center (LFOC)
Training Audience

Flag Plot

Response Cell

Problem Control Cell

Fleet Command Blue

MAGTF XXI Blue Server

Fleet Command Red

MAGTF XXI Red

Training Audience

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Mission Applicability

- Navy and Marine Corps Training Focus On Deployed Amphibious Readiness Group (ARG) to Effectively Plan and Rehearse for Emergent Operations While Enroute to an Objective Area.
- Training Audience for EWTSM Prototype Would Include Amphibious Task Force (Navy) And Landing Force (Marine) Commanders and Their Staffs.
- Facilitates Combined Navy-Marine Corps Team Training in a Realistic Simulation Environment.
- No Current Training System Available to Support This Deployed Combined Training Requirement.

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Technology and Products

Design and Develop a Prototype EWTSM That Will Cooperatively Link / Leverage The Following Products / Technology:

- Jane's Fleet Command™ Commercial PC Simulation
- MAGTF XXI PC Simulation (Phase II SBIR)
- High-level Architecture (HLA) Federation to Incorporate Navy Training MetaFOM and Internet Tools (VR-Link™)

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Phase II Specific Objectives

- Integrate HLA Simulation System Architecture for both Simulations.
- Develop Simulation System Data Structures.
- Incorporate Associated Primary Software Components with the Simulation System.
- Install EWTSM Prototype Onboard LHD Ship for Evaluation by PHIBRON Staff.
- Research Transition of EWTSM Prototype to a Production Training System, such as BFTT.

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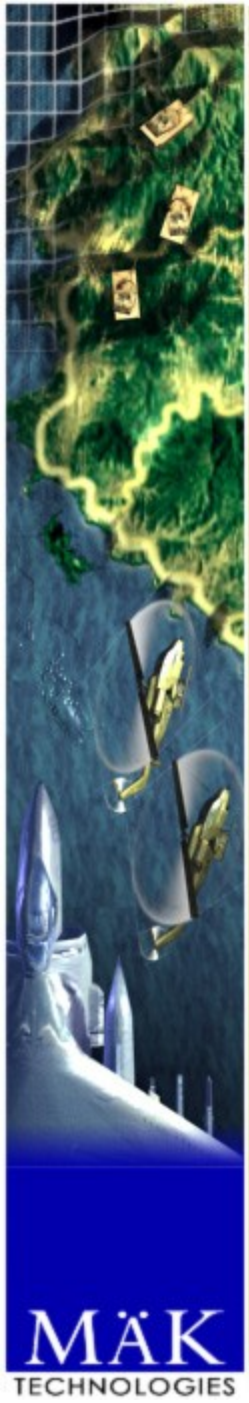

Training Implementation Approach

Planning

Staff trainees examine mission directives and purpose and select course of action

Create Scenario

Trainees input scenario generation data and modified by trainers with mission editor features of Fleet Command and MAGTF XXI to create scenario that accurately reflects:

- Geographic area
- Environmental conditions (anticipated weather, acoustic conditions, sea state)
- Route and speed of advance to AOA
- Location of inland objectives/ reference points
- Estimated enemy positions
- Operational objectives

Execute Scenario

Use EWTSM Training System to simulate mission

Debrief

Review execution and factors such as:

- Attainment of operational goals and objectives
- Performance, attrition
- Time factor

Re-execute

If debriefing indicated need and time allows, re-execute scenario with alternate strategy/tactics

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Customers

Primary:

- PHIBRON Commanders and Their Staffs
- MEU Commanders and Their Staffs

Secondary:

- Marine Corps University (MCU)
- Marine Corps Combat Development Center
- Expeditionary Warfare Training Groups
- Surface Warfare Officers School
- Tactical Training Groups (LANT/PAC)
- Individual Amphibious Ships
- Stricom and U.S. State Department

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Technical Issues

What FOM?

- Start with RPR 1.0
- Upgrade to NTMF 0.2 with new VR-Link FOM-mapper now possible (VR-Link is FOM agile)

Does HLA Work on the Internet?

- Yes, RTI back-end structure flexibility combined with FOM flexibility enables HLA over internet

Terrain Database Compatibility

- Big issue since games run at different levels. Anticipated problem, but still required effort.

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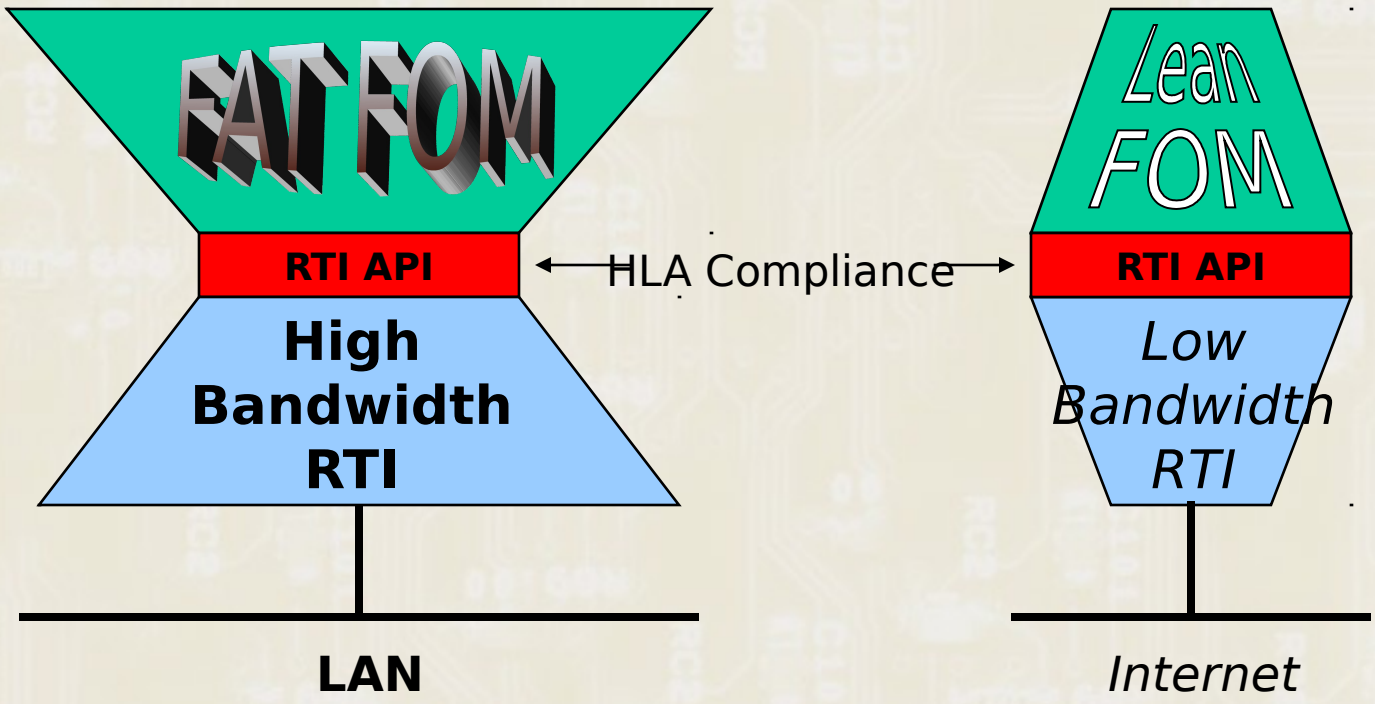
HLA on the Internet



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Next Steps

- Phase III, deploy successfully with as many Navy and Marine customers as possible
- Continue to build the system with more content (air, ground, space…)
- Host 24/7 battles on the Internet
- Augment other Navy systems (BFTT, Navy DMT…)

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Back Up

- Simulation Demos as time allows at end.

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MAGTF XXI

- Run auto demo

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FLEET COMMAND™
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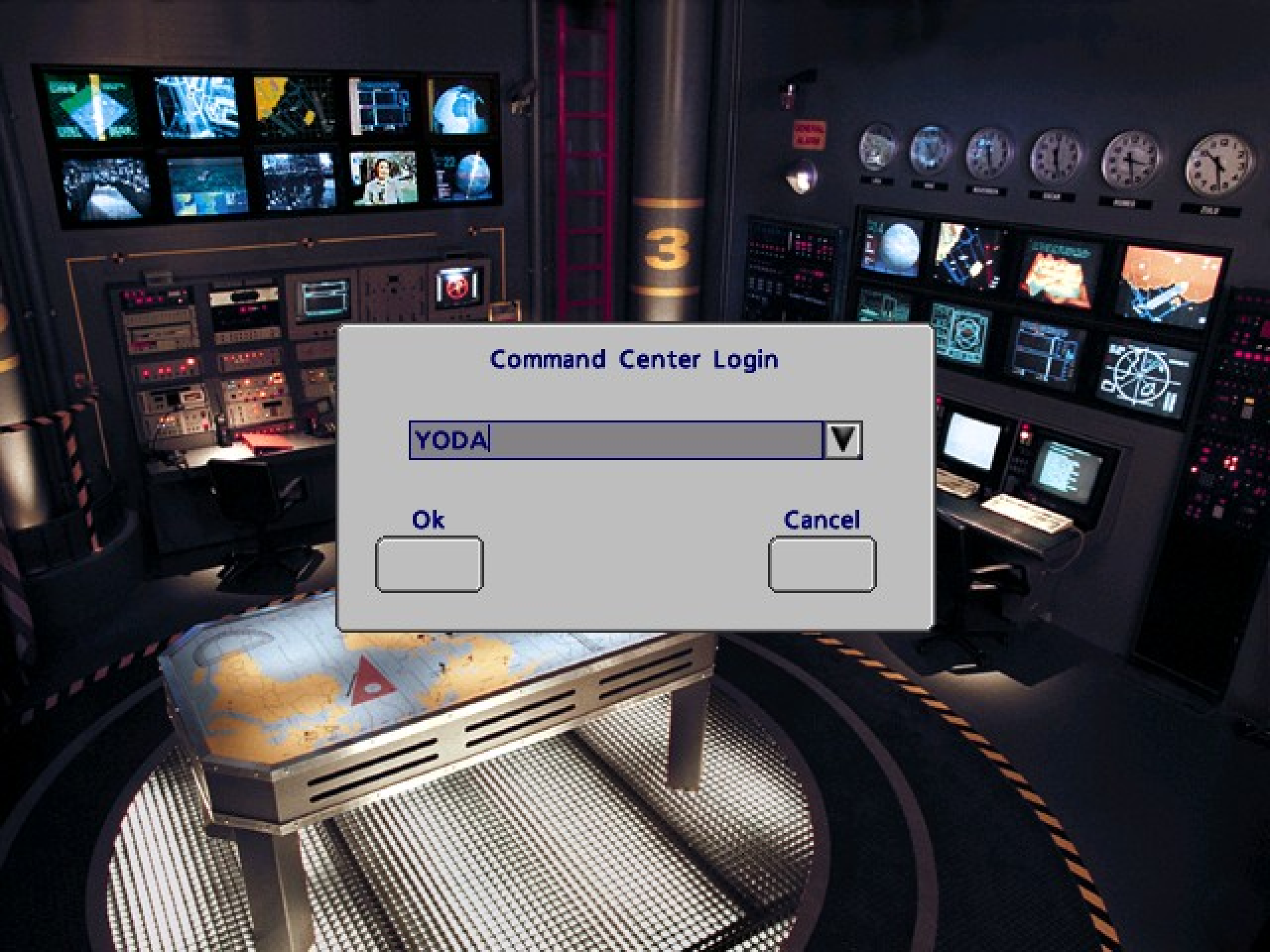
3

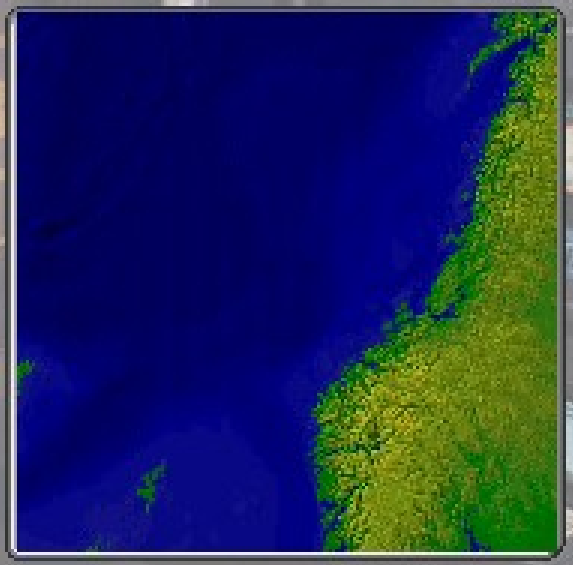

Command Center Login
YODA
Ok
Cancel

FLEET COMMAND
TUTORIALS
MISSION EDITOR
SINGLE MISSIONS
JANE'S REFERENCE
CAMPAIGNS
ADMIRAL'S LOG
MULTIPLAYER
OPTIONS
DIS - HLA
EXIT

CAMPAIGNS
Bay of Bengal
Strait of Malacca
Taiwan Strait
Kuril Island
Campaign Region 1: "BAY OF BENGAL."
India has mobilized amphibious assault forces and has
deployed INS Viraat in the Gulf of Mannar. Your forces are
ACCEPT
CANCEL

SINGLE MISSIONS

- ★ CVBG Norwegian Sea
- ★ Chinese Special Forces
- ★ Shore Bombardment
- ★ Pacific Pirates
- ★ Macho Madness
- ★ Iraqi Strike
- ★★ Wyoming Deploys
- ★★ Hair Trigger
- ★★ No-Fly Zone
- ★★ Deadly Transit
- ★★ Strike Back
- ★★ Iranian Attack



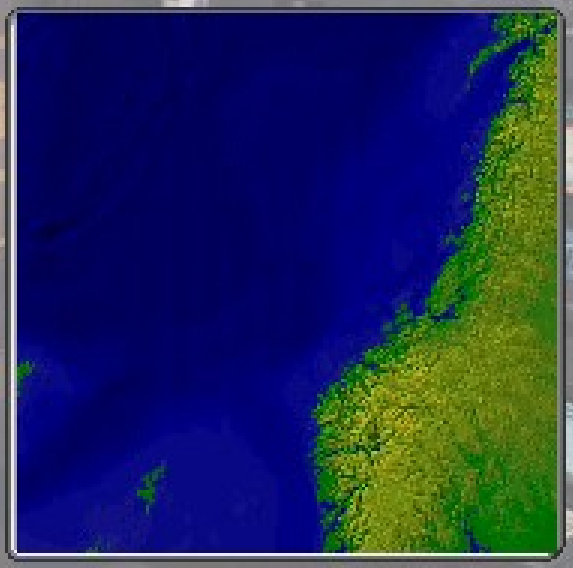
Protect your Carrier from cruise missile attack.

ACCEPT

CANCEL

SINGLE MISSIONS

- ★★ Indian Ocean Transit
- ★★ Bugs and Drugs
- ★★ A Line in the Sand
- ★★ Strait and Narrow
- ★★ Rogue Fleet
- ★★ Hold the Tiger at Bay
- ★★★ Norway Alta Fjord
- ★★★ Nominated for an Oscar
- ★★★ Pay-Backs Are Hell
- ★★★ Running the Gauntlet
- ★★★ Plugging the Gap
- ★★★ War on Drugs



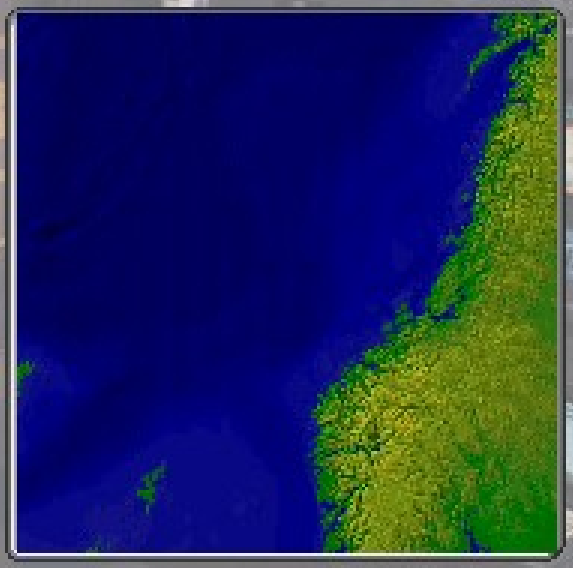
Protect your Carrier from cruise missile attack.

ACCEPT

CANCEL

SINGLE MISSIONS

- ★★★ Liberating Liberia
- ★★★ He's At It Again!
- ★★★ Ancient Rivalry
- ★★★ Palestinian Peace
- ★★★★ Red Sea Chokepoint
- ★★★★ A Furor in the Fjord
- ★★★★ Nuestras Malvinas
- ★★★★ Red Sea Ambush
- ★★★★ Baltic Sea Magic
- ★★★★ South China Slugfest
- ★★ Mine and Goal Test
- ★★ Mine Test



Protect your Carrier from cruise missile attack.

ACCEPT

CANCEL

ARGENTINA
AUSTRALIA
BLUE
BRAZIL
CHINA, PEOPLE'S REPUBLIC
FRANCE
GERMANY
INDIA
IRAN
JAPAN
LIBYA
MALAYSIA
NEUTRAL
PAKISTAN
RUSSIA
TAIWAN
UNITED KINGDOM
USA

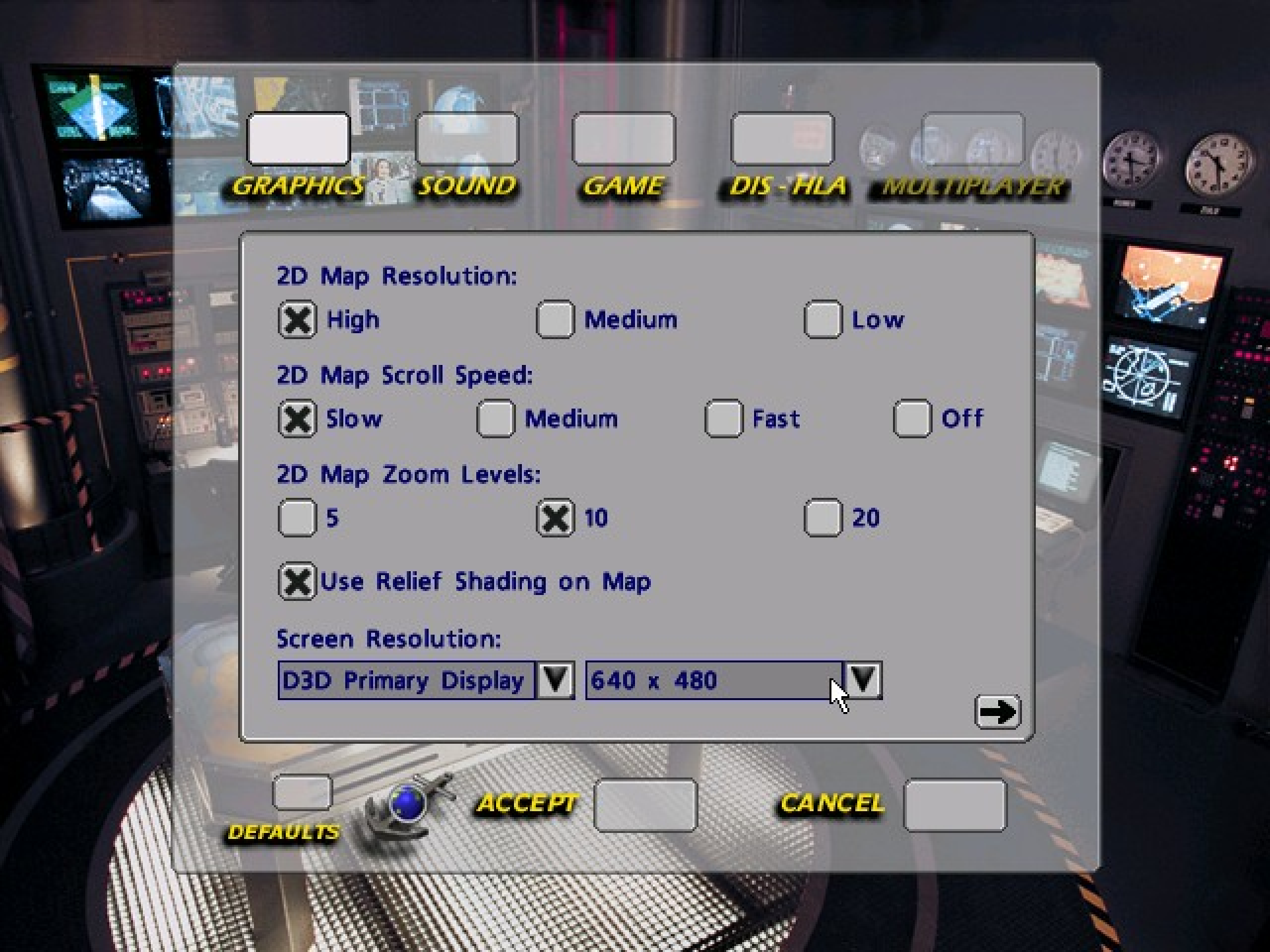
WEAPONS:
AIR TO AIR MISSILES
ANTI-SURFACE MISSILES
MINES AND DEPTH CHARGES
STRIKE MISSILES
SURFACE TO AIR MISSILES
TORPEDOES

PLATFORMS:
CHINA, PEOPLE'S REPUBLIC

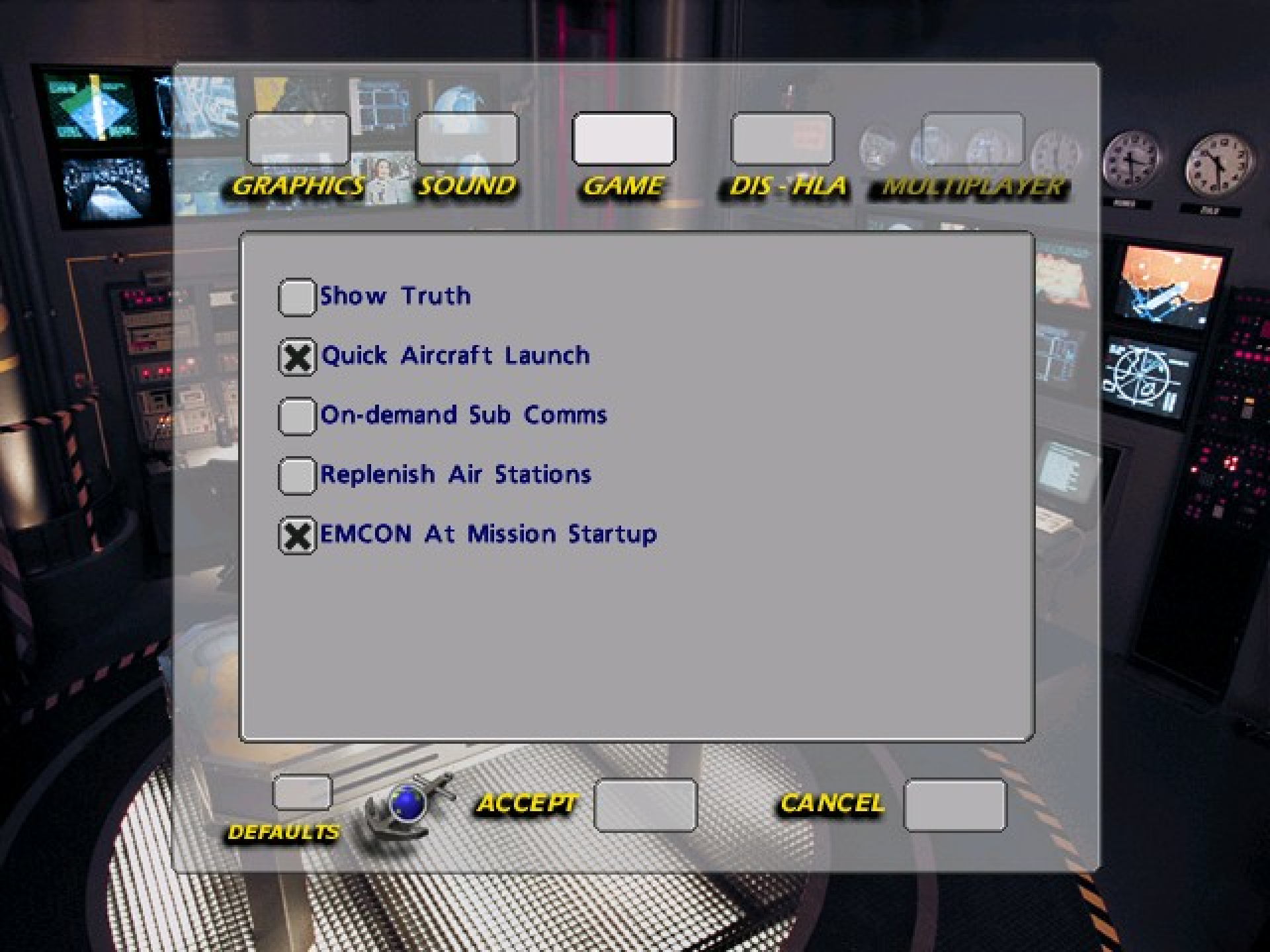
SUBMARINE CLASSES
Han SSN
Song SSK
Kilo SSK
Ming SS
XIA SSBN

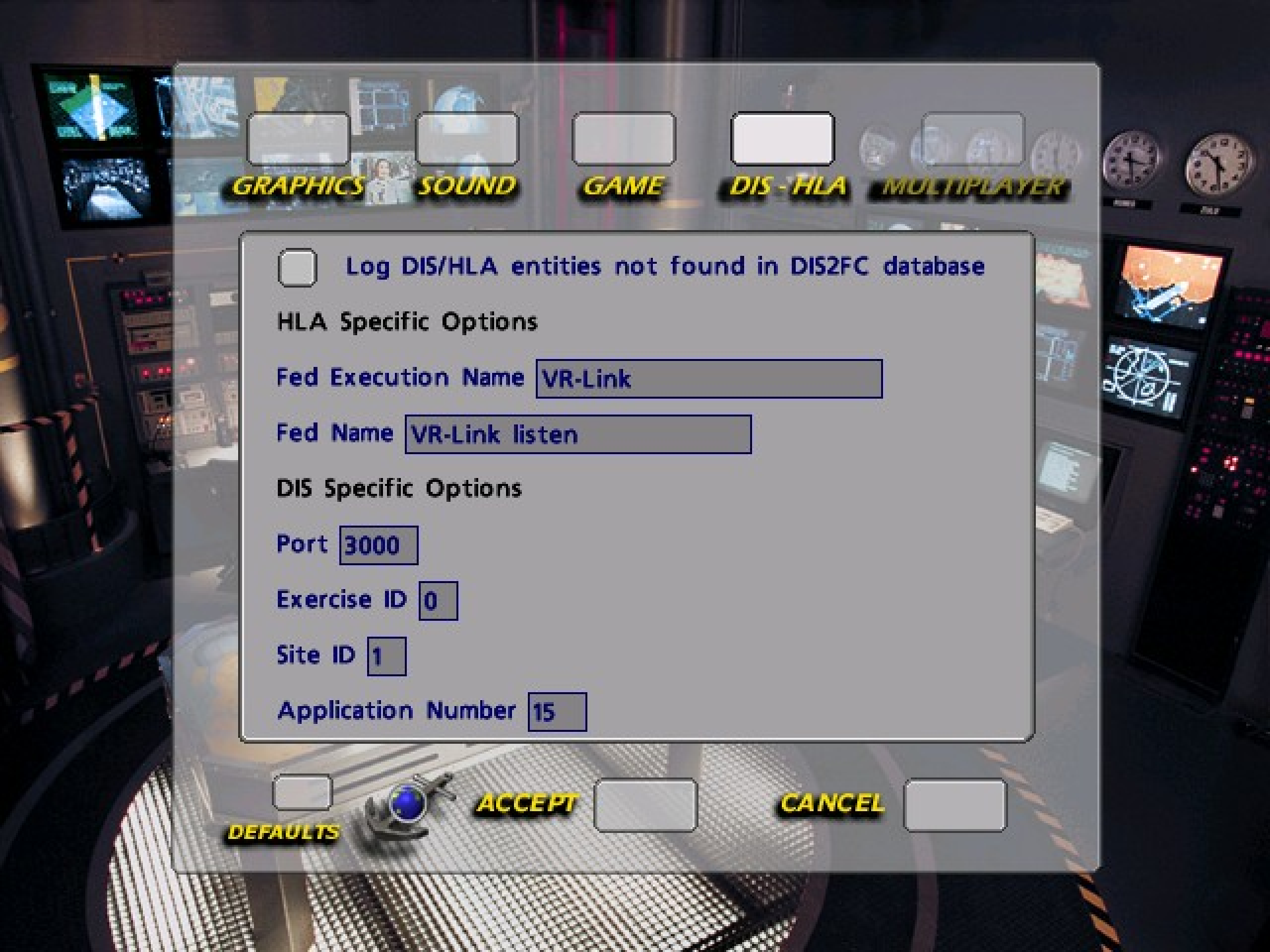
SURFACE SHIP CLASSES
Sovremenny DDG
Luda I DDG
Luhu DDG
Jiangwei FFG
Jianghu I FFG
Huangfen PCFG
Hoku PCFG
Huchuan PHT
Yukan LST
Xiangyang Hong AGI
T 43 MSO
Fuqing AOR

AIRCRAFT
SU-27 Flanker B


GRAPHICS
SOUND
GAME
DIS - HLA
MULTIPLAYER
2D Map Resolution:
High
Medium
Low
2D Map Scroll Speed:
Slow
Medium
Fast
Off
2D Map Zoom Levels:
5
10
20
Use Relief Shading on Map
Screen Resolution:
D3D Primary Display
640 x 480
DEFAULTS
ACCEPT
CANCEL

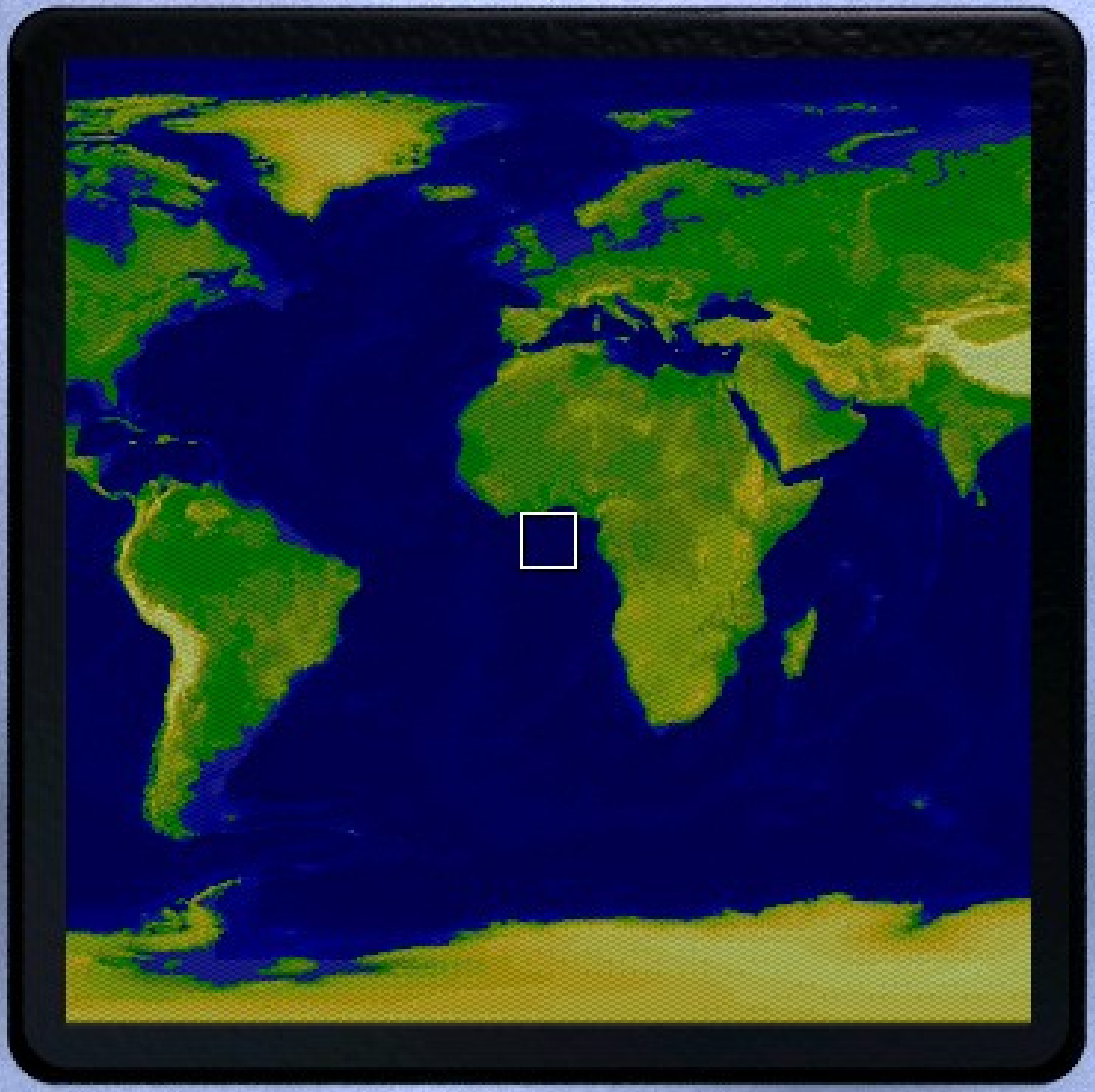
GRAPHICS
SOUND
GAME
DIS - HLA
MULTIPLAYER
Music
Enabled
Volume
0 1 2 3 4 5 6 7 8 9 10
Ambient
Enabled
Volume
0 1 2 3 4 5 6 7 8 9 10
Voice
Enabled
Volume
0 1 2 3 4 5 6 7 8 9 10
Sound Effects
Enabled
Volume
0 1 2 3 4 5 6 7 8 9 10
3D Sound Effects
Enabled
DEFAULTS
ACCEPT
CANCEL


GRAPHICS
SOUND
GAME
DIS - HLA
MULTIPLAYER
Show Truth
Quick Aircraft Launch
On-demand Sub Comms
Replenish Air Stations
EMCON At Mission Startup
DEFAULTS
ACCEPT
CANCEL


GRAPHICS
SOUND
GAME
DIS - HLA
MULTIPLAYER
Log DIS/HLA entities not found in DIS2FC database
HLA Specific Options
Fed Execution Name
VR-Link
Fed Name
VR-Link listen
DIS Specific Options
Port
3000
Exercise ID
0
Site ID
1
Application Number
15
DEFAULTS
ACCEPT
CANCEL

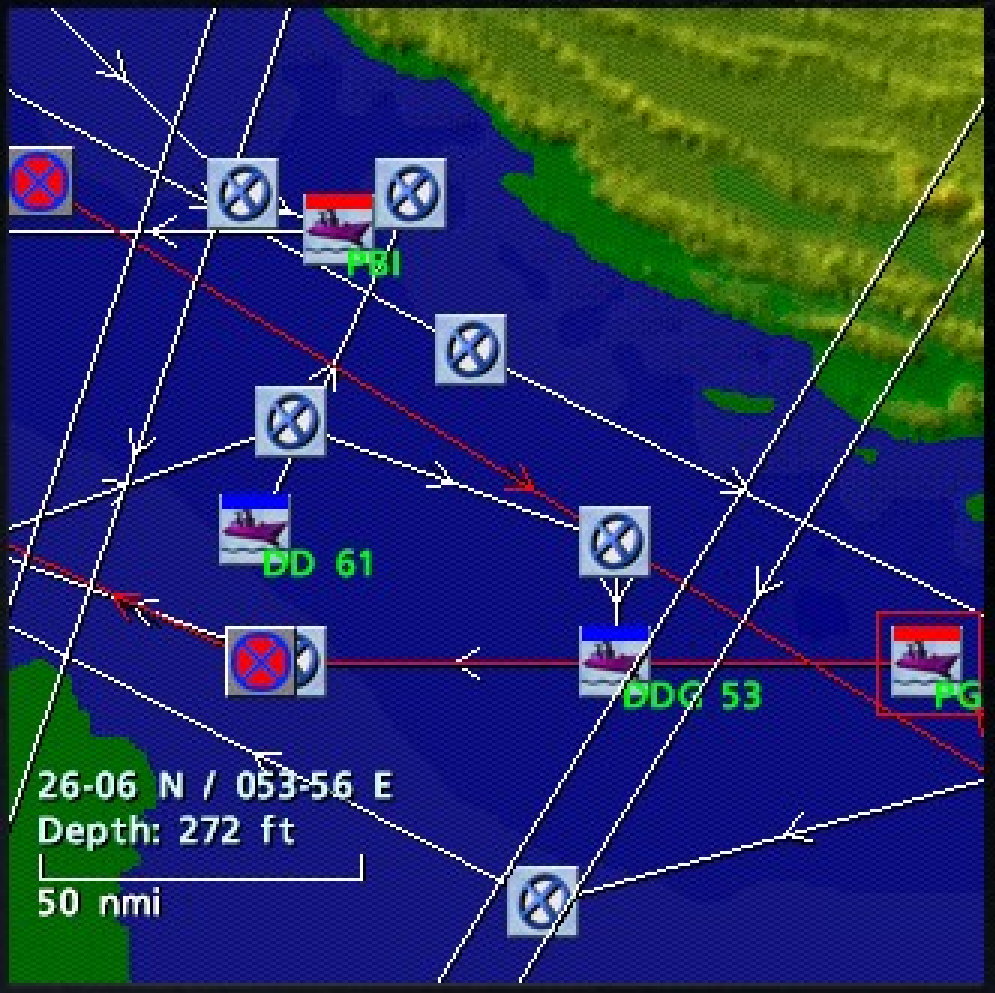
SELECT A CONNECTION TYPE
Internet/TCP Connection
SPX Connection
ACCEPT
CANCEL

Mission Edit View Add Options



MISSION EDITOR

Mission Edit View Add Options



Surface : PGF 221

Side:

Side 1

Country:

Iran

Class Designation:

KAMAN PGF

Name:

Kaman PGF221

Tactic:

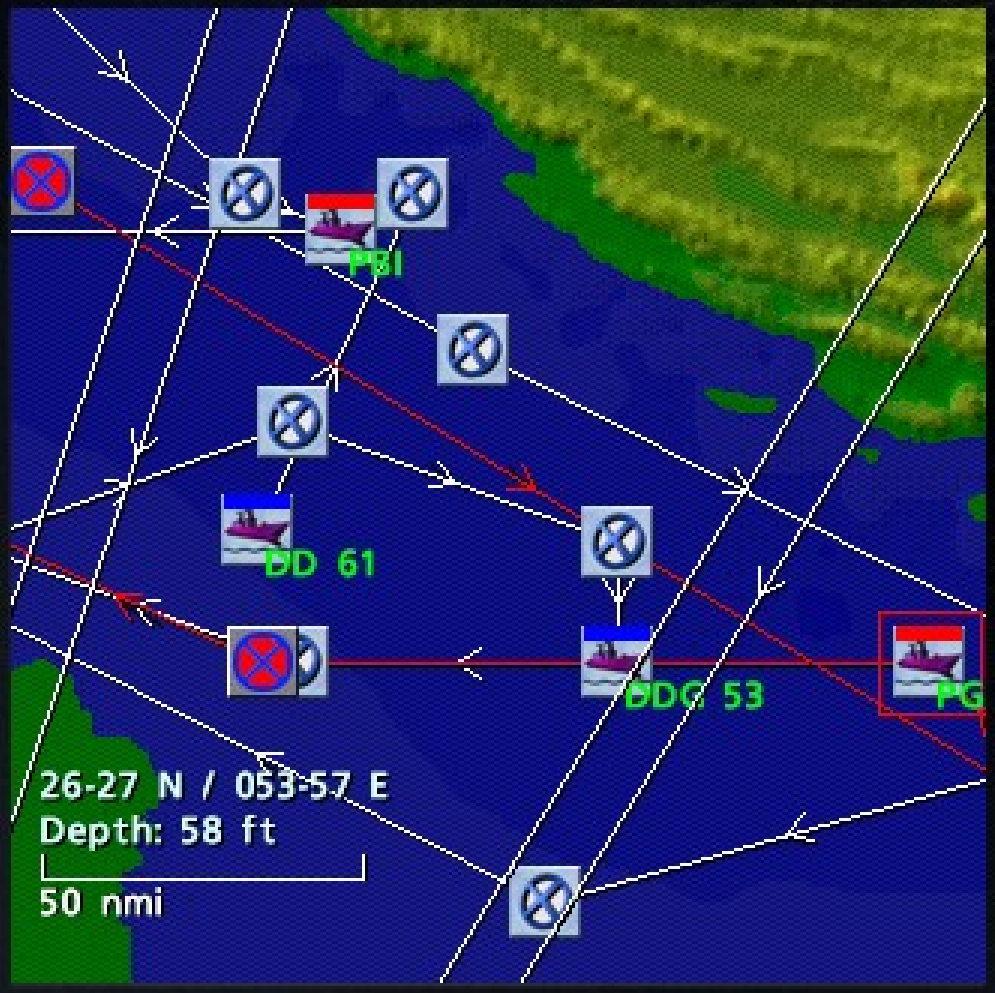
Area WayPoints

Speed (kts):

12

Page 1 of 2

Mission Edit View Add Options



Prob of Inclusion: 100

Latitude: 26-09 N

Longitude: 053-48 E

Points: 500

Doctrine:

AirEvadeAir
AirEvadeMissile
AutoClassify

Mission
Edit
View
Add
Options
New Mission
Load Mission
Save Mission
Save Mission As
Load Multiplayer Mission
Save As Multiplayer Mission
Load DIS/HLA Mission
Save As DIS/HLA Mission
Load Specific Lat/Lon
Exit
DD 61
DDG 53
27-48 N / 051-30 E
Depth: 43 ft
50 nmi
Surface : PGF 221
Side:
Side 1
Country:
Iran
Class Designation:
KAMAN PGF
Name:
Kaman PGF221
Tactic:
Area WayPoints
Speed (kts):
12
Page 1 of 2

Mission
Edit
View
Add
Options
Copy
Paste
Delete
Select Multiple Objects
Set Random Start Box
Remove Random Start Box
Side Alliances
Environmental Conditions
DD 61
DDG 53
27-48 N / 052-38 E
Height: 1976 ft
50 nmi
Surface : PGF 221
Side:
Side 1
Country:
Iran
Class Designation:
KAMAN PGF
Name:
Kaman PGF221
Tactic:
Area WayPoints
Speed (kts):
12
Page 1 of 2

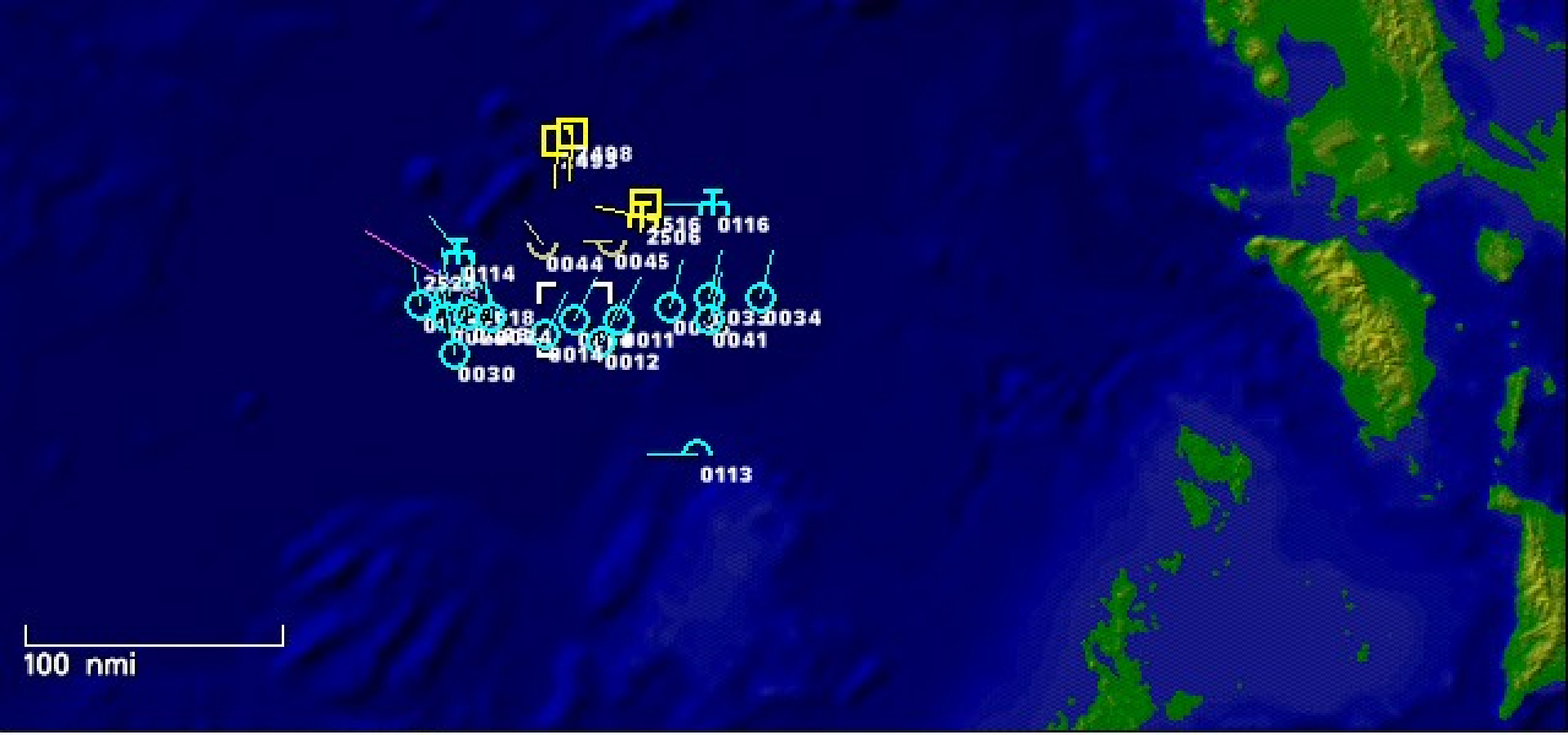
Mission
Edit
View
Add
Options
✔Bathymetry
✔Scale
✔Object Names
✔Tactics
Type
Side
Group
Filters
DD 61
DDG 53
27-43 N / 053-25 E
Height: 3241 ft
50 nmi
Surface : PGF 221
Side:
Side 1
Country:
Iran
Class Designation:
KAMAN PGF
Name:
Kaman PGF221
Tactic:
Area WayPoints
Speed (kts):
12
Page 1 of 2

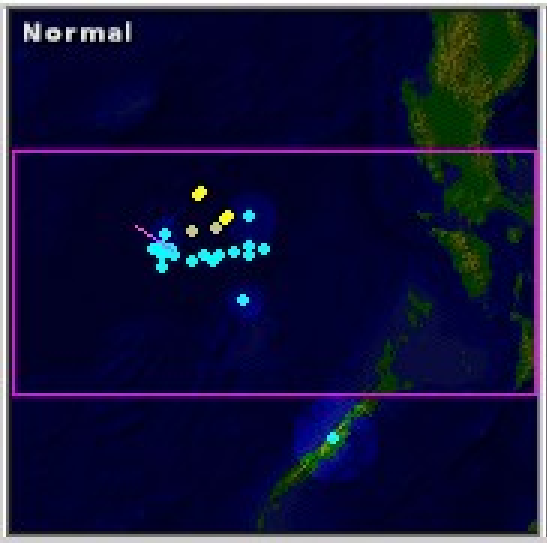
Mission
Edit
View
Add
Options
Transiting Waypoints
Waypoint
Minefield
Global Goal
Land Vehicle
PØI
DD 61
DDG 53
27-49 N / 053-29 E
Height: 3004 ft
50 nmi
Surface : PGF 221
Side:
Side 1
Country:
Iran
Class Designation:
KAMAN PGF
Name:
Kaman PGF221
Tactic:
Area WayPoints
Speed (kts):
12
Page 1 of 2
Set Player Side

Mission
Edit
View
Add
Options
Set Player Side
Create Dynamic Group
Edit Dynamic Group
Goal Precedence
Define Mission Description
Define Intel Message
Define Tasking Message
Set Mission Title
Formations
Tactic Editor
PØI
DD 61
DDG 53
27-49 N / 053-29 E
Height: 3004 ft
50 nmi
Kaman PGF221
Tactic:
Area WayPoints
Speed (kts):
12
Page 1 of 2

CHINA SLUGFEST

MISSION TASKING
1. Protect Spratly Islands from Chinese invasion force. Use element of surprise to your tactical advantage. Consider use of emissions control (EMCON).
2. Check the Intel Board, CIC has updated the Force Composition of the Chinese fleet.
3. Make prudent use of early warning aircraft so as not to give away the position of the main body.
4. Deploy ASW-capable units to screen the main body.
5. Good Hunting.
ACCEPT
CANCEL

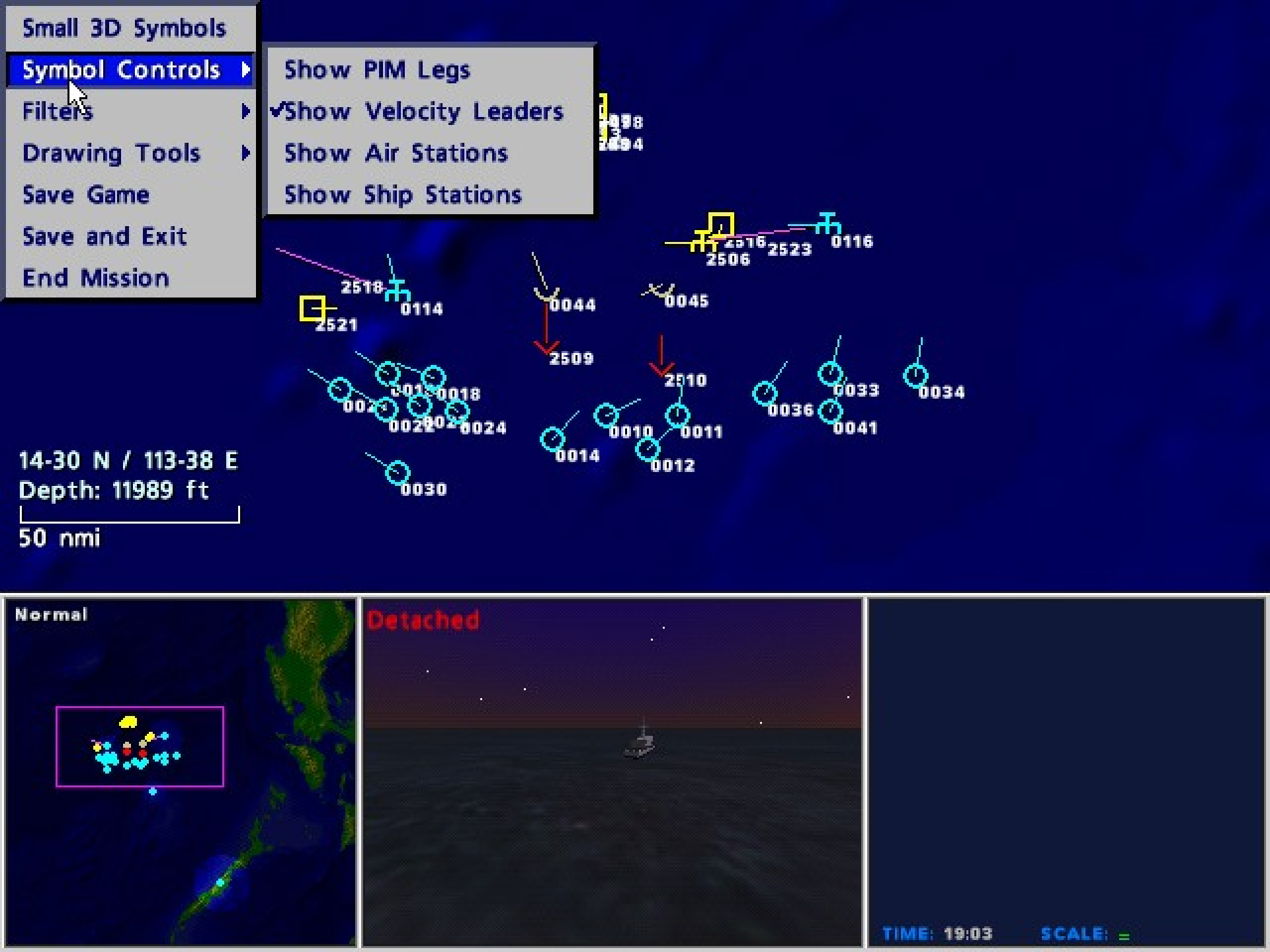


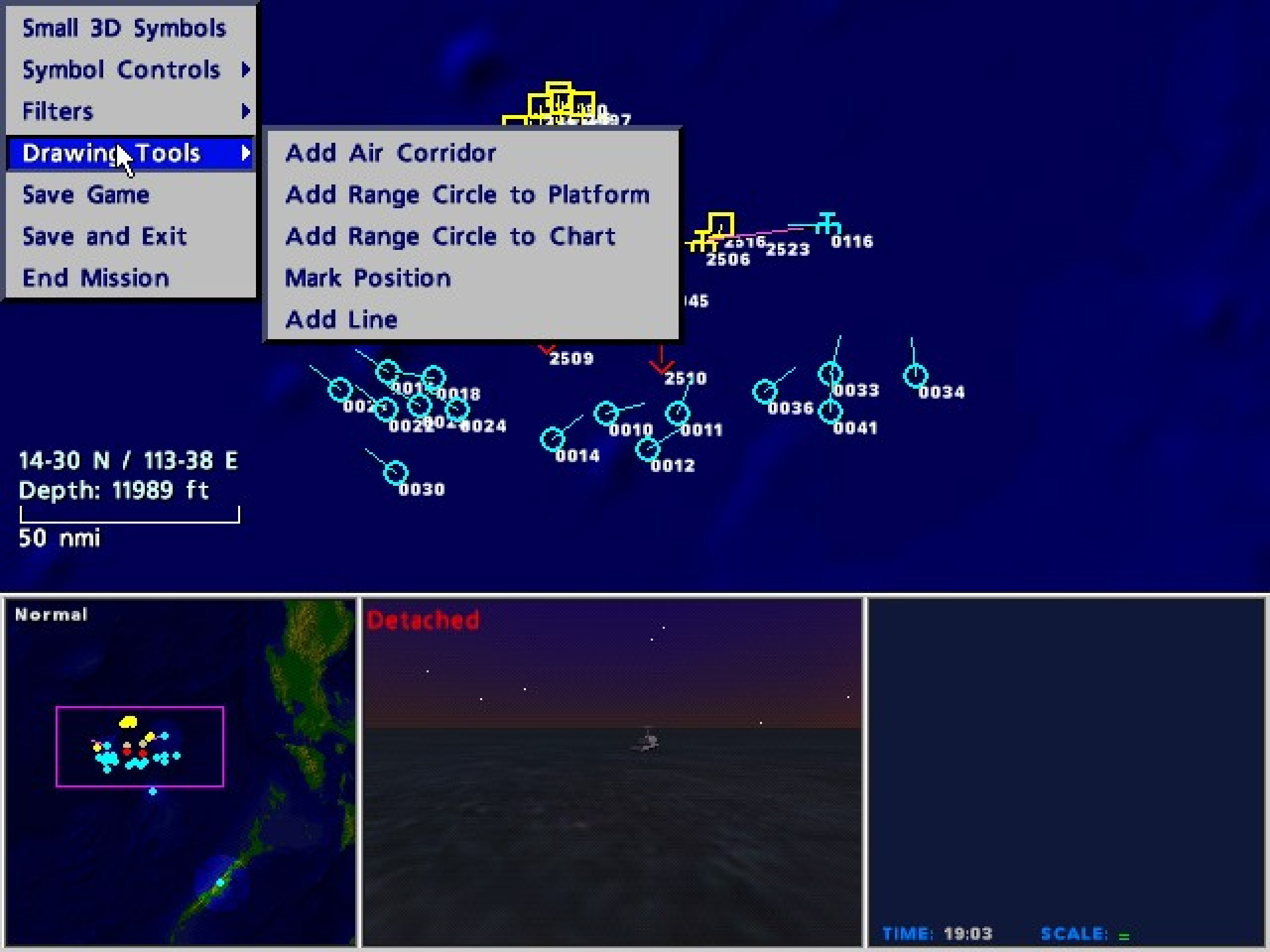


Perth DDG38
CLASS: PERTH DDG
TRACK #: 0010
COURSE: 027
SPEED: 20 KTS
%DAMAGE: 0
ORDERS: Patrol
WEAPONS:
SM-1 MR SAM - 36 Harpoon - 4
MK 46 Torpedo - 6 Guns - 80
Cannon - 3000

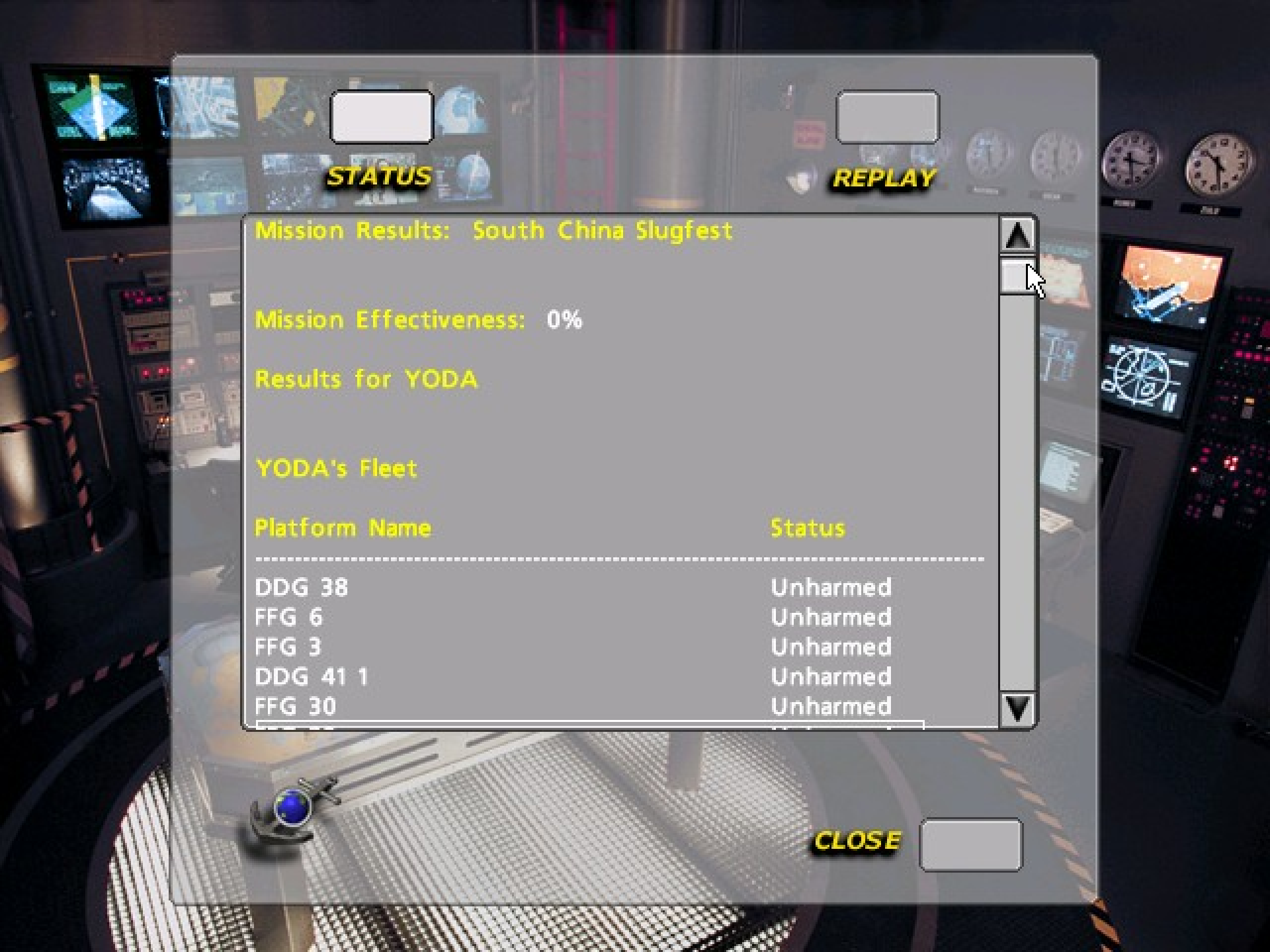
TIME: 19:00 SCALE: =

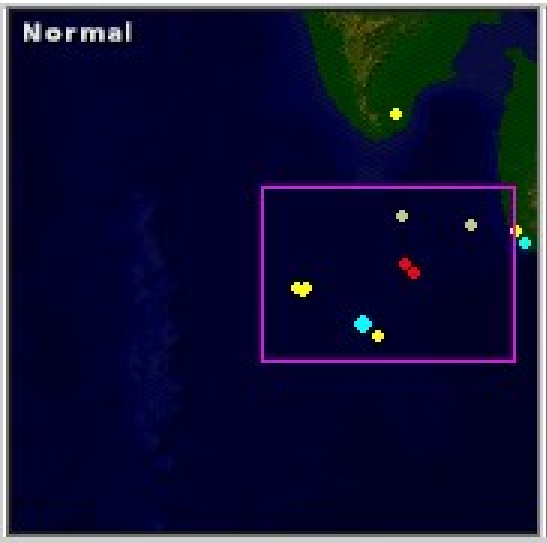
2601
2516
2506
0116
2518
0114
2521
0044
0045
2509
2510
0033
0018
0022
0024
0014
0019
0030
13-02 N / 116-13 E
Depth: 13844 ft
50 nmi
Engage With
Identify
Sensors
Return to Station
Rescue
SM-1 MR SAM
Harpoon
Guns
Cannon
MK 46 Torpedo
Normal
Tether
CLASS: PERTH DDG
TRACK #: 0011
COURSE: 027
SPEED: 20 KTS
%DAMAGE: 0
ORDERS: Patrol
WEAPONS:
SM-1 MR SAM - 36 Harpoon - 4
MK 46 Torpedo - 6 Guns - 80
Cannon - 3000
TIME: 19:01
SCALE: =


Small 3D Symbols
Symbol Controls
Filters
Drawing Tools
Save Game
Save and Exit
End Mission
Show PIM Legs
Show Velocity Leaders
Show Air Stations
Show Ship Stations
2518
0114
2521
0044
0045
2509
2510
2506
2523
0116
0018
0022
0024
0014
0010
0011
0012
0030
0033
0034
0036
0041
14-30 N / 113-38 E
Depth: 11989 ft
50 nmi
Normal
Detached
TIME: 19:03
SCALE:


Small 3D Symbols
Symbol Controls
Filters
Drawing Tools
Save Game
Save and Exit
End Mission
Add Air Corridor
Add Range Circle to Platform
Add Range Circle to Chart
Mark Position
Add Line
2509
2510
0116
2506
2523
0018
0024
0010
0011
0014
0012
0030
0033
0034
0036
0041
14-30 N / 113-38 E
Depth: 11989 ft
50 nmi
Normal
Detached
TIME: 19:03
SCALE:

Small 3D Symbols
Symbol Controls
Filters
Drawing Tools
Save Game
Save and Exit
End Mission
Show Threat
Show Allied
Show Neutral
Show Unknowns
Show Tags
Show Tracks
Show ESM Bearing Lines
2518
0114
2521
0044
2509
0018
0022
0024
0010
0011
0036
0041
0014
0012
0030
14-24 N / 113-44 E
Depth: 13623 ft
50 nmi
Normal
Detached
TIME: 19:03
SCALE:


STATUS
REPLAY
Mission Results: South China Slugfest
Mission Effectiveness: 0%
Results for YODA
YODA's Fleet
Platform Name
Status
DDG 38
Unharmed
FFG 6
Unharmed
FFG 3
Unharmed
DDG 41 1
Unharmed
FFG 30
Unharmed
CLOSE



Antietam CG54
CLASS: TICONDEROGA VLS CG
TRACK #: 0073
COURSE: 038
SPEED: 25 KTS
%DAMAGE: 0
ORDERS: Patrol
WEAPONS:
SM-2 SAM - 98 TLAM SLCM - 10
MK 46 Torpedo - 12
TASM SSM - 10 Harpoon - 8
MK 50 Torpedo - 4 Guns - 40

TIME: 02:01 SCALE: =

General Keys:
F1 = show help
F2 = toggle 2D/3D full screen
F4 = Comms
F5 = ASTABs
F6 = Options
F7 = Jane's Information Book

3D Keys:
Ctrl+arrow keys = pan view
Ctrl+ -/+ = zoom out/zoom in
l = lock view
F3 = full screen 3D

2D Keys:
A = show/hide allieds
T = show/hide threats
N = show/hide neutrals
U = show/hide unknowns
B = show/hide ESM bearing lines
V = show/hide velocity leaders
K = show/hide track numbers
G = show/hide tags
M = show/hide PIM legs
Space = hook speaker
a = show/hide air stations
s = show/hide ship stations
Ctrl+1-9 = assign group
Ctrl+Shift+1-9 = show group members
1-9 = hook group

Platform Shortcut Keys:
e = engage
v = identify
b = return to base
S = return to station
c = jam
R = rescue
Ctrl+r = search
Ctrl+n,s,e,w = scram north, south, east, west
y = toggle patrol tactic
C = toggle EMCON
f = flight deck
j = platform specific Jane's info

Ctrl+i = minimize
t = toggle time scale
Ctrl+t = real time
p = pause
g = save game
Ctrl+g = save and exit
q = end mission

F9 = tethered camera view
F10 = fly by camera view
F11 = action camera view
F12 = detached camera view

Map Control Keys:
arrow keys = pan map
-/+ = zoom out/zoom in
Ctrl+Right/Left Mouse = zoom out/in
i = toggle NTDS/3D symbols
Tab = select next closest platform
X = center map at cursor
r = quick range circle
x = toggle lat/lon display
z = toggle scale display
Enter = add mark at cursor
Ctrl+a = add air corridor
Ctrl+m = add range circle to map
Ctrl+v = toggle radar coverage
Ctrl+u = toggle revisit rate
Del = deletes selected map object
Esc = cancels current operation

Shift+1 = set speed slow
Shift+2 = set speed medium
Shift+3 = set speed fast
Shift+7 = set alt/depth low/shallow
Shift+8 = set alt/depth medium
Shift+9 = set alt/depth high/deep
Ctrl+c = stay at comms depth
Ctrl+j,k,l = comms interval 1, 2, 4 hour(s)
m = show/hide user commands
P = show/hide rally points
Ctrl+p = toggle platform range circle drawing